

ABSTRACT OF THE DISCLOSURE

A programmably sliceable switch-fabric unit (PSSU) and methods of use are disclosed. An  $N \times N'$  switch matrix is programmably made to operate as if it were a plurality of  $S \times S'$  virtual switch slices, where  $S < N$  and  $S' < N'$ . Ingressing requests each specify an egress path (unicast mode) or plural egress paths (multicast mode) in terms of one or more relative egress port numbers. A request translator converts relative egress port numbers into absolute egress port numbers by determining what virtual slice each request belongs to. The translated egress requests are handed off to an arbitration and/or scheduling mechanism for further processing. If the translated request is granted, the corresponding payload egresses through the actual egress port(s) which the translated request asked for. An inventory of PSSU's may be distributed in accordance with the disclosure to segmented markets such that each PSSU can service the specific needs of a market, be it providing a plurality of  $4 \times 4$  switch slices,  $8 \times 8$  switch slices,  $16 \times 16$  switch slices, or otherwise. In one embodiment, virtual slices are distributed throughout a physical switch-matrix so as to minimize pinout crossover for external line card units.